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Reinhold Schwalm

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EXAMINER

BROOKS, CLINTON A

ART UNIT

PAPER NUMBER

1621

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/588,488	Applicant(s) SCHWALM ET AL.	
	Examiner CLINTON BROOKS	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Status of Claims

This action is **FINAL**. Claims 1-7 stand rejected and claims 8-15 are withdrawn.

Non-Statutory Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned

with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Non-provisional

Claim 2 is rejected on the ground of nonstatutory obviousness-type double patenting over claim 1 of U. S. Patent No. 7250481 (“the ‘481 patent”) in view of Japanese patent publication no. JP-A-60-072980 to Teruo (the Japanese patent and an English abstract were provided by Applicant, “the ‘980 publication”) In addition, Applicant admissions of the teachings of JP-A-60-072980 from paragraph [0005], page 1 are applied.

The ‘481 patent teaches a process for preparing a crosslinked hydrogel (column 41, claim 1, line 36), comprising the steps of reacting a polyalcohol A with at least one alpha,beta-ethylenically unsaturated carboxylic acid B (column 41, claim 1, line 37 to 38) in the presence of at least one esterification catalyst C (column 41, claim 1, line 40) and at least one polymerization inhibitor D (column 41, claim 1, line 41), and a solvent E which forms an azeotrope with water (column 41, claim 1, line 42) to form an ester F (column 41, claim 1, line 38 to 41), removing at least a portion of the water formed in from the reaction mixture (column 41, claim 1, line 44), neutralizing the reaction mixture (column 41, claim 1, line 46 to 47), removing the solvent by distillation (,column 41, claim 1, line 47 to 48) and/or stripping with a gas inert under the reaction conditions polymerizing the reaction mixture from one of stages a) to i), through, additional monoethylenically unsaturated compounds N (column 41,

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claim 1, line 53 to 55), and also, at least one further copolymerizable hydrophilic monomer M (column 41, claim 1, line 55 to 57) in the presence of at least one free-radical initiator K (column 41, claim 1, line 51 to 52) and at least one graft base L (column 41, claim 1, line 51 to 53), drying the reaction mixture (column 41, claim 1, line 61 to 63), grinding and/or sieving the reaction mixture (column 41, claim 1, line 63 to 65), which comprises using, as the polymerization inhibitor D (column 41, claim 1, line 38 to 44).

The '481 patent fails to teach a chromanol derivative of formula (III).

The '980 publication teaches 2,2,5,7,8-pentamethyl-6-chromanol and 2,2,8-trimethyl-6-chromanol ('980 publication English abstract). Further, the '980 publication teaches that these compounds act as stabilizers against free radical polymerization or oxidative decomposition. Further, the '980 publication teaches that vinyl monomers are stabilized in a general way, and that acrylic acid in an inert atmosphere by way of example (Applicants admission in background, paragraph [0005]-[0006]). Still further the Applicant admission related to the '980 publication teaches that the chroman derivatives (2,2,5,7,8-pentamethyl-6-chromanol, 2,2,5,7-tetramethyl-6-chromanol and 2,2,8-trimethyl-6-chromanol) showed superiority compared to alpha-tocopherol with regard to the stabilization of acrylic acid (Applicants admission in background, paragraph [0006]). Furthermore, the "purpose" section of the '980 publication English abstract teaches that chroman derivatives are stabilizers for organic materials that are potentially harmless to the human body and domestic animals, and that they are inexpensive. ('980 publication, English abstract, purpose section).

Therefore, it would have been prima facie to one of ordinary skill in the art at the time the invention was made to combine the process taught by the '481 patent with the process taught

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by the '980 publication. The skilled artisan would have been motivated to do so because he/she would have recognized that the 2,2,5,7,8-pentamethyl-6-chroman derivative was a superior stabilizer for vinyl containing monomers, and he/she would have been motivated to use a molecule that is harmless to humans and domestic animals, and inexpensive. Thus, the skilled artisan would reasonably expect success in this combination.

Provisional

Claim 1 and 2 are provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claim 7 and 14-16 of copending Application No. 10516702 (the '702 application) in view of the '980 publication cited above. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The '702 application, as a whole, teaches a process for preparing an ester F of a polyalcohol A with at least one alpha beta 3-ethylenically unsaturated carboxylic acid B (claim 7), reacting a polyalcohol A (glycerol) with at least one alpha, beta-ethylenically unsaturated carboxylic acid B in the presence of at least one esterification catalyst C and at least one polymerization inhibitor D (claim 7), and a solvent E which forms an azeotrope with water (claim 7), to form an ester F (claim 7), removing a portion of the water formed in a) from the reaction mixture (claim 7), neutralizing the reaction mixture (claim 7), removing the solvent by distillation (claim 7), and stripping with a gas inert under the reaction conditions (claim 7), and a polymerization inhibitor D (claim 7).

Regarding claim 2, the '702 application teaches a process for preparing a crosslinked hydrogel (claim 14), comprising the steps of reacting a polyalcohol A with at least one alpha,beta-ethylenically unsaturated carboxylic acid B (claim 7) in the presence of at least one

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esterification catalyst C (claim 7) and at least one polymerization inhibitor D (claim 7), and a solvent E which forms an azeotrope with water (claim 7) to form an ester F (claim 7), removing at least a portion of the water formed in from the reaction mixture (claim 7), neutralizing the reaction mixture (claim 7), removing the solvent by distillation (claim 7) and/or stripping with a gas inert under the reaction conditions polymerizing the reaction mixture from one of stages a) to i), through, additional monoethylenically unsaturated compounds N (claims 14-16), and also, at least one further copolymerizable hydrophilic monomer M (claims 14-16) in the presence of at least one free-radical initiator K (claim 14-16) and at least one graft base L (claim 14), drying the reaction mixture (claim 14-16), grinding and/or sieving the reaction mixture (claim 14-16).

The '702 application fails to teach a chromanol derivative of formula (III).

The '980 publication teaches 2,2,5,7,8-pentamethyl-6-chromanol and 2,2,8-trimethyl-6-chromanol ('the '980 publication English abstract). Further, the '980 abstract teaches that these compounds act as stabilizers against free radical polymerization or oxidative decomposition. Further, the '980 application teaches that vinyl monomers are stabilized in a general way, and that acrylic acid in an inert atmosphere by way of example (Applicants admission in background, paragraph [0005]-[0006]). Still further the Applicant admission related to the '980 abstract teaches that the chroman derivatives (2,2,5,7,8-pentamethyl-6-chromanol, 2,2,5,7-tetramethyl-6-chromanol and 2,2,8-trimethyl-6-chromanol) showed superiority compared to alpha-tocopherol with regard to the stabilization of acrylic acid (Applicants admission in background, paragraph [0006]). Furthermore, the purpose section of the '980 abstract teaches that chroman derivatives are stabilizers for organic materials that are

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potentially harmless to the human body and domestic animals, and that they are inexpensive. ('980 publication, English abstract, "purpose" section).

Therefore, it would have been *prima facie* to one of ordinary skill in the art at the time the invention was made to combine the process taught by the '481 patent with the process taught by the '980 abstract. The skilled artisan would have been motivated to do so because he/she would have recognized that the 2,2,5,7,8-pentamethyl-6-chroman derivative was a superior stabilizer or vinyl containing monomers, and he/she would have been motivated to use a molecule that is harmless to humans and domestic animals, and is inexpensive. Thus, the skilled artisan would reasonably expect success in this combination.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim 1 and 2 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 11 and 17 of copending Application No. 10551630 (the '630 application) in view of the '980 abstract cited above. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The '630 application, as a whole, teaches a process for preparing an ester F of a polyalcohol A with at least one alpha beta 3-ethylenically unsaturated carboxylic acid B (claim 7), reacting a polyalcohol A with at least one alpha, beta-ethylenically unsaturated carboxylic acid B in the presence of at least one esterification catalyst C and at least one polymerization inhibitor D (claim 11), and a solvent E which forms an azeotrope with water (claim 11), to form an ester F (claim 11), removing a portion of the water formed in a) from

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the reaction mixture (claim 11), neutralizing the reaction mixture (claim 11), removing the solvent by distillation (claim 11), and stripping with a gas inert under the reaction conditions (claim 11), a polymerization inhibitor D (claim 11).

Regarding claim 2, the '630 application teaches a process for preparing a crosslinked hydrogel (claim 17), comprising the steps of reacting a polyalcohol A with at least one alpha,beta-ethylenically unsaturated carboxylic acid B (claim 11) in the presence of at least one esterification catalyst C (claim 11) and at least one polymerization inhibitor D (claim 11), and a solvent E which forms an azeotrope with water (claim 11) to form an ester F (claim 11), removing at least a portion of the water formed in from the reaction mixture (claim 11), neutralizing the reaction mixture (claim 11), removing the solvent by distillation (claim 11) and/or stripping with a gas inert under the reaction conditions polymerizing the reaction mixture from one of stages a) to i), through, additional monoethylenically unsaturated compounds N (claims 17), and also, at least one further copolymerizable hydrophilic monomer M (claims 17) in the presence of at least one free-radical initiator K (claim 17) and at least one graft base L (claim 17), drying the reaction mixture (claim 17), grinding and/or sieving the reaction mixture (claim 17).

The '630 application fails to teach a chromanol derivative of formula (III).

The '980 abstract teaches 2,2,5,7,8-pentamethyl-6-chromanol and 2,2,8-trimethyl-6-chrmoanol and motivation (as discussed above in paragraph 10 of this action).

Therefore, it would have been prima facie to one of ordinary skill in the art at the time the invention was made to combine the process taught by the '630 application with the process taught by the '980 abstract. The skilled artisan would have been motivated to do so because

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he/she would have recognized that the 2,2,5,7,8-pentamethyl-6-chroman derivative was a superior stabilizer or vinyl containing monomers, and he/she would have been motivated to use a molecule that is harmless to humans and domestic animals, and is inexpensive. Thus, the skilled artisan would reasonably expect success in this combination.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6 stand rejected under 35 USC 103(a) as being unpatentable over the '481 patent in view of the '980 publication for the reasons of record and herein below in the response to Applicant's arguments. In addition, Applicant admissions of the teachings of JP-A-60-072980 from the instant application paragraph [0005] are applied below.

Regarding claims 1 and 3-6 the '481 patent, as a whole, teaches a process for preparing an ester F of a polyalcohol A with at least one alpha beta 3-ethylenically unsaturated carboxylic acid B (column 3, lines 56 to 60), reacting a polyalcohol A with at least one alpha, beta-ethylenically unsaturated carboxylic acid B in the presence of at least one esterification catalyst C and at least one polymerization inhibitor D (column 3, lines 61 to 65), and a solvent E which forms an azeotrope with water (column 3, lines 64 to 65) in an oxygenous gas atmosphere ("stabilization may be further supported by the presence of an oxygen-containing gas", column 14 lines 46-49), to form an ester F (column 3 line 65), removing a portion of the water formed in a) from the reaction mixture (column 3, line 66 to 67), neutralizing the reaction mixture (column 4 line 1), removing the solvent by distillation (column 4, line 4), and stripping with a gas inert under the reaction conditions (column 4, line 3), a polymerization inhibitor D (column 3, lines 61 to 65), at least one 6-chromanol derivative of the formula (III). The '481 patent teaches a list of polymerization inhibitors including tocopherols, alpha, beta, gamma, delta, and

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epsilon-tocopherol, tocol, and alpha-tocopherolhydroquinone (, for example a (column 13, line 12 to 13).

Regarding claim 2, the '481 patent teaches a process for preparing a crosslinked hydrogel (column 41, claim 1, line 36), comprising the steps of reacting a polyalcohol A with at least one alpha,beta-ethylenically unsaturated carboxylic acid B (column 41, claim 1, line 37 to 38) in the presence of at least one esterification catalyst C (column 41, claim 1, line 40) and at least one polymerization inhibitor D (column 41, claim 1, line 41), and a solvent E which forms an azeotrope with water (column 41, claim 1, line 42) to form an ester F (column 41, claim 1, line 38 to 41), removing at least a portion of the water formed in from the reaction mixture (,column 41, claim 1, line 44), neutralizing the reaction mixture (column 41, claim 1, line 46 to 47), removing the solvent by distillation (column 41, claim 1, line 47 to 48) and/or stripping with a gas inert under the reaction conditions polymerizing the reaction mixture from one of stages a) to i), through, additional monoethylenically unsaturated compounds N (column 41, claim 1, line 53 to 55), and also, at least one further copolymerizable hydrophilic monomer M (column 41, claim 1, line 55 to 57) in the presence of at least one free-radical initiator K (column 41, claim 1, line 51 to 52) and at least one graft base L (column 41, claim 1, line 51 to 53), drying the reaction mixture (column 41, claim 1, line 61 to 63), grinding and/or sieving the reaction mixture (column 41, claim 1, line 63 to 65), which comprises using, as the polymerization inhibitor D (column 41, claim 1, line 38 to 44), at least one 6-chromanol derivative of the formula (III).

Further, the '481 patent teaches the use of oxygenous gas (column 15 lines 55 to 64), and specific polyalcohols of claim 6 (column 4, lines 59 to 67). Examples include but are not

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limited to trimethylol-propane and 1,2-ethylene glycol. In addition, the '481 patent teaches wherein a C1-C4 alkyl ester of a carboxylic acid B (column 5, lines 10 to 11) is used, that transesterification reaction can take place to cross-link (column 4, line 28 to 32), and an esterification catalyst C (column 11 line 66 to column 12 line 7).

The '481 patent fails to teach a chromanol derivative of formula (III), and a transesterification catalyst.

The '980 publication teaches 2,2,5,7,8-pentamethyl-6-chromanol and 2,2,8-trimethyl-6-chromanol (English abstract). Further, the '980 publication teaches that these compounds act as stabilizers against free radical polymerization or oxidative decomposition. Further, the '980 publication teaches that vinyl monomers are stabilized in a general way, and that acrylic acid in an inert atmosphere by way of example (Applicants admission in background, paragraph [0005]-[0006]). Still further the Applicant admission related to the '980 abstract teaches that the chroman derivatives (2,2,5,7,8-pentamethyl-6-chromanol, 2,2,5,7-tetramethyl-6-chromanol and 2,2,8-trimethyl-6-chromanol) showed superiority compared to alpha-tocopherol with regard to the stabilization of acrylic acid (Applicants admission in background, paragraph [0006]). Furthermore, the purpose section of the '980 abstract teaches that chroman derivatives are stabilizers for organic materials that are potentially harmless to the human body and domestic animals, and that they are inexpensive. (Japanese abstract, purpose section).

Therefore, it would have been prima facie to one of ordinary skill in the art at the time the invention was made to combine the process taught by the '481 patent with the process taught by the '980 abstract. The skilled artisan would have been motivated to do so because he/she would have recognized that the 2,2,5,7,8-pentamethyl-6-chroman derivative was a superior stabilizer

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or vinyl containing monomers, and he/she would have been motivated to use a molecule that is harmless to humans and domestic animals, and is inexpensive. Thus, the skilled artisan would reasonably expect success in this combination.

Claim 7 stands rejected under 35 USC 103(a) as being unpatentable over the '481 patent in view of the '980 publication and further in view of United States patent No. 4672105 to Schlosser *et al.* (the '105 patent) and journal article to Otera ("the Otera article", *Chem. Rev.* **1993**, 93, 1449-1470) for the reasons of record and herein below in the response to Applicant's arguments.

The combined teachings of the '481 patent and the '980 publication have been discussed above. The combination of references fails to teach a C1 to C4-alkyl ester of a carboxylic acid used and, a transesterification catalyst.

However, The '105 patent teaches transesterifying a (meth)acrylic acid ester derived from an alcohol of 1-4 carbon atoms with a transesterifying polyhydric alcohol in the presence of at least one metal compound catalyst system (abstract).

The Otera article teaches that "[o]n some occasions, transesterification is more advantageous than the ester synthesis from carboxylic acids and alcohols. For instance, some carboxylic acids are sparingly soluble in organic solvents and accordingly difficult to subject to homogeneous esterification whereas esters are commonly soluble in most organic solvents" (introduction, paragraph 1). In addition, the Otera article teaches that "[t]he ester-to-ester transformation is particularly useful when the parent carboxylic acids are labile and difficult to isolate" (introduction, paragraph 1).

Therefore, it would have been prima facie to one of ordinary skill in the art at the time the invention was made to combine the process taught by the '481 patent and '333 patent with the process taught by the '105 patent as motivated by the teachings of the Otera article. The skilled artisan would have been motivated to do so because he/she would have recognized that the transesterification process can be used for carboxylic acid substrates that are sparingly soluble, labile, and difficult to isolate. Thus, the skilled artisan would reasonably expect success in this combination.

Response to Applicant's Arguments

Applicant amended claims 1 and 2 to specify that step a) of the reaction is performed in an oxygenous gas atmosphere. Applicant's state that the amendment is supported by the specification at page 19, lines 11-12.

Applicant's argument has been considered but is not persuasive. The '481 patent teaches that the process can be performed in an oxygenated environment (see for example, column 14, lines 46 to 49).

Applicant argues that these rejections have been stated together as they all hinge on essentially the same issue. In particular, the Examiner has clearly stated that none of the '481 patent, the copending '702 application, or the copending '630 application disclose anything regarding the use of a 6-chromanol derivative of formula (III) as required in the present invention, particularly in a reaction such as being carried out in step a) of the present invention. The Examiner has relied on the discussion of JP '980 in the present specification at page 1, lines 23-36, and its abstract, to suggest that combining the teachings of JP '980 with any of these primary references would be obvious on the basis that Applicants state that JP '980 discloses a stabilizer against free-radical polymerization or oxidative decomposition using a similar chroman derivative. However, as noted in the present specification at page 1, lines 32-33, JP '980 discloses stabilization of vinyl monomers in general, and discloses stabilization of acrylic acid in an inert atmosphere. Applicants provide herewith an English translation of JP '980 for the Examiner's consideration. As noted in this translation, the stabilization of acrylic acid is only shown in an inert atmosphere in the absence of oxygen. (see Example 1 of JP '980). The other examples and comparative examples merely describe the use of the chroman derivative in preventing decomposition in the oxidation of white oil, a decidedly different type of reaction and different type of compound to be stabilized. None of these examples (nor the other disclosure in JP '980) would suggest that the 6- chromanol compounds of the present invention would be useful or successful in inhibiting polymerization in the present invention reaction, particularly in an oxygenous gas atmosphere!.

Applicant's argument has been considered but is not persuasive. The '481 patent teaches that the process can be performed in an oxygenated environment (see for example, column 14, lines 46 to 49). Further, the '980 publication teaches "[t]he organic materials which are stabilized by means of the present invention comprise organic materials possessing unsaturated bonds which readily undergo oxidative decomposition and organic materials which undergo radical degradation due to heat or light in the same way as the oxidative decomposition of unsaturated bonds" (pages 3 and 4, in the translation provided by Applicant and made of record on April 15, 2009). Thus, the '980 publication teaches that a process to prevent oxidative decomposition.

Applicants argue that the data within the present application, however, provide a clear showing that the use of such a polymerization inhibitor D in the present invention provides clear advantages in the present reaction compared to the use of other types of inhibitors, as measured by the combination of amount of deposits present in the reaction and HAZEN color number. As shown in the present examples, using a 6-chromanol of formula (III) gave a combination of low deposits (0-1 part) and good color numbers (see Examples 1-3 on pages 39-40). However, upon use of other types of polymerization inhibitors, either or both of the deposits or HAZEN color numbers were unacceptably high. Applicants note that in the case of Comparative Example 4, while no deposits were observed, the color number was through the roof at a value of 887!. In Comparative Example 3, while the HAZEN color number was near acceptable levels at 88, the deposits were unacceptably high at 17 parts! Comparative Examples 1 and 2 had color numbers of 131 and 55 respectively, but had unacceptably high deposit levels of 2 and 3 parts, respectively. Accordingly, Applicants have shown that the use of a 6-chromanol derivative of formula (III) in reaction a) in an oxygenous gas atmosphere, as required in the present invention, provides significant improvements in the reaction, with comparable yields, but significantly better combination of low deposits level and HAZEN color numbers, when compared to other types of polymerization inhibitors.

With respect to the unexpected results, Applicant's arguments have been considered but are not persuasive. Applicant cites examples 1-3 of the specification. In examples 1-3, the specific compound 2,2,5,7,8-pentamethyl-6-chromanol is used. There are no results that cover the scope of genus recited. Thus, the results are not commensurate in scope with the claim.

Further, the '980 publication (in the translation provided by Applicant) on page 5 in example 1, comparative examples 1-3, teaches that the compound taught by the '980 publication gave better results than alpha-tocopherol, glycine, and no additive (see table below),

Table 1: Stability Test Results

Time elapsed in test	Example 1	Comp. Example 1	Comp. Example 2	Comp. Example 3
	Additive Employed in the Example or in the Comparative Examples			
	Compound of the Present Invention*	α -Tocopherol	Glycine	No additive
0 min	colourless, transparent	colourless, transparent	colourless, transparent	colourless, transparent
60 min	colourless, transparent	colourless, transparent	colourless, transparent	yellow
180 min	colourless, transparent	colourless, transparent	yellow	deep yellow (polym)
240 min	colourless, transparent	colourless, transparent	deep yellow	deep yellow (polym)
360 min	colourless, transparent	slight yellowing	deep yellow	deep yellow (polym)

* 2,2,5,7,8-pentamethyl-6-chromanol

(The data in the table show the discolouration and polymerization [polym] brought about with passage of time)

Applicant argues that no oxygen is present in this set of results. However, the '980 publication teaches that "the gas phase region of each container" was purged. The liquid acrylic acid was not purged to remove dissolved gas.

Further, in example 2, comparative examples 4 to 6, the '980 publication teaches that the compound taught by the '980 publication provides protection in an oxygen atmosphere where the gas phase region is replaced with oxygen gas.

Table 2: Oxidation Stabilization Test Results

Time elapsed in stability test	Example 2	Comp. Example 4	Comp. Example 5	Comp. Example 6
	Compound of the Present Invention*	α -Tocopherol	Glycine	No additive
0 minutes	0	0	0	0
30 minutes	40	50	140	170
60 minutes	70	80	220	250

* 2,2,5,7,8-pentamethyl-6-chromanol

(The figures in the table show the level of oxidation (mm) [denoted by the length of the region of the glass tube where the oxygen gas in the glass tube had been replaced by water])

The results from Tables 1 and Table 2 shows that the compound of the '980 publication are expected to improve stability.

Conclusion

No claims allowed. This action is FINAL.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLINTON BROOKS whose telephone number is (571)270-7682. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DANIEL SULLIVAN can be reached on (571)272-9407. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Cab
/Daniel M Sullivan/

Supervisory Patent Examiner, Art Unit 1621